

METHOD OF OPERATION  
TELEPHONE CIRCUIT

With Single Ended Cord - For Listening And Monitoring - With Repeating Coil  
Monitoring Feature - Arranged For Machine Ringing And - For Dialing Full  
Mechanical Office - Special Chief Operator's Desk.

THE SOUTHWESTERN TELEPHONE AND TELEGRAPH COMPANY  
MAIN OFFICE, KANSAS CITY, MISSOURI.

GENERAL DESCRIPTION

1. This circuit is used at a special chief operator's desk to provide the desk operator with a means of communicating with subscribers and other operators. It is arranged for repeating coil monitoring, listening, and dialing, and for cutting off ringing current automatically when machine ringing is used. It is equipped with a ringing key and with a flashing key. It is also provided with an operator's set and a desk stand so arranged that the operator's set may be used alone or the head receiver may be used with the desk stand transmitter.

2. When the plug of this circuit is inserted in a monitoring jack, the operator can monitor on the connection with all keys normal. If the trunk, talking or holding key is operated at this time, the telephone set is automatically disconnected from the monitoring circuit. To make a call over a ring down trunk, the plug of this circuit is inserted in the trunk jack and the ringing key operated. The telephone set is bridged across the trunk by the operation of the talking key. If the call is made over an automatic trunk, the talking key is operated and the desired number dialed. In the case of a ringdown tie trunk, the talking and ringing keys are both operated.

DETAILED DESCRIPTION

OPERATION

3. When a call over a key ended trunk is answered, the talking key associated with the lighted trunk lamp is operated bridging the B75 relay across the trunk in series with the winding of the #54-D retardation coil and shunted by the other winding, thereby tripping machine ringing. The B75 relay operates, closing a circuit through the E249 relay and the special #178 relay per D-10866. At this time the E249 relay being the reverse of the special #178 relay in that it is quick to operate and slow to release, operates, disconnecting the winding of the E106 relay from its break contact. When the special #178-relay operates, the E249 relay releases and the circuit is closed to operate the E106 relay in series with the E179 relay. The E179 relay operated disconnects generator and ground from the leads of the ringing key associated with the cord, while the E106 relay operated disconnects the receiver from the #27 repeating coil and connects it to the #24 induction coil. The circuit is arranged in this way so that the interval between the operation of the key and the operation of the E106 relay which bridges the telephone set across the tip and ring of the trunk is sufficient to prevent a flow of ringing current in the receiver. The B75 relay releases quickly preventing a subsequent flow of ringing current in the receiver should the distant operator momentarily disconnect. If the trunk key is operated to the holding position, the telephone set is disconnected from the trunk and a retardation coil is bridged across, preventing the distant cord supervisory lamp from lighting. When the holding key is operated, the E11 relay operates disconnecting the monitoring circuit from the telephone set. Should



the call be incoming over a tie line, the B75 relay and #54-D retardation coil are not bridged across the trunk, but ground is applied to operate the E106 relay in series with the E179 relay by the operation of the talking key. When the flashing key is operated, the E247 relay operates, opening the ring side of the trunk and holding the E106 relay operated. The B75 relay and the #54-D retardation coil are disconnected from across the tip and ring of trunk, lighting the cord supervisory lamp. This cycle of operation reduces the click produced in the receiver when the circuit through the B75 and #54-D retardation coil is opened. When the flashing key is restored, the above cycle is reversed, releasing the E247 relay and closing the ring side of the trunk. The E247 relay is rather slow in releasing to prevent the ring side from being closed before the B75 relay and #54-D retardation coil are bridged across the tip and ring of the trunk, thereby reducing the click in the receiver. When the talking key is restored, the called supervisory lamp at the distant end lights as a disconnect signal.

4. To make a call over a ringdown trunk or tie line, the plug of this circuit is inserted in the trunk jack, or if the tie line is key ended, the talking key is operated. The ringing key is then operated, lighting the trunk lamp at the distant end. When the talking key is operated, the telephone set is bridged across the trunk. Should the call be to an automatic office instead of the ringing key being operated, the talking key is operated and the desired number is dialed.

5. When the #137 plug of the telephone set is inserted in either pair of telephone jacks, the special E24 relay per D-14054 operates in series with the transmitter and the primary winding of the #24 induction coil. The operation of this relay disconnects the transmitter of the special #20-CM desk stand per D-12746 and connects in that of the telephone head set. The head receiver may be used in connection with the special #20-CM desk stand by inserting the #87 cord in the telephone jacks.



CIRCUIT REQUIREMENTS

	<u>OPERATE</u>	<u>NON-OPERATE</u>	<u>RELEASE</u>
Spl.#178 per D-10866	Rather slowly in local circuit at 20 volts. Testing current .047 ampere. Adjusting current .044 ampere.	Testing current .034 ampere. Adjusting current .035 ampere.	
B75	In series with 350 ohms and one winding of the #54-D retardation coil when shunted by the other winding of the latter at 20 volts. Through relay: Testing current .0052 ampere. Adjusting current .0049 ampere. When applied to ring lead: Testing current .039 ampere. Adjusting current .037 ampere.		Through relay: Testing current .0025 ampere. Adjusting current .0026 ampere. When applied to ring lead: Testing current .018 ampere. Adjusting current .019 ampere.
E11	In local circuit at 20 volts. Testing current .026 ampere. Adjusting current .024 ampere.	Testing current .010 ampere. Adjusting current .011 ampere.	
E106	In series with E179 relay at 20 volts. Testing current .027 ampere. Adjusting current .026 ampere.	Testing current .020 ampere. Adjusting current .021 ampere.	
E179	In series with E106 relay at 20 volts. Testing current .022 ampere. Adjusting current .021 ampere.	Testing current .012 ampere. Adjusting current .013 ampere.	
E247	In local circuit at 20 volts. Testing current .020 ampere. Adjusting current .019 ampere.		Rather slowly at 28 volts. Testing current .0025 ampere.



(4 Pages) Page #4.  
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### CIRCUIT REQUIREMENTS

#### OPERATE

#### NON-OPERATE

#### RELEASE

E249

Quickly in local  
circuit at 20 volts.  
Testing current  
.018 ampere.  
Adjusting current  
.017 ampere.

Rather slowly at  
28 volts.  
Testing current  
.0025 amp.  
adjusting current  
.0026 ampere.

Spl.E24  
per  
D-14054

In series with the  
transmitter and  
primary winding of  
the #24 induction  
coil at 20 volts.  
Testing current  
.0053 ampere.  
Adjusting current  
.0050 ampere.

Testing current  
.0038 ampere.  
Adjusting current  
.004 ampere.

HBH-VI. - CVP. - GBJ.  
2/20/22.